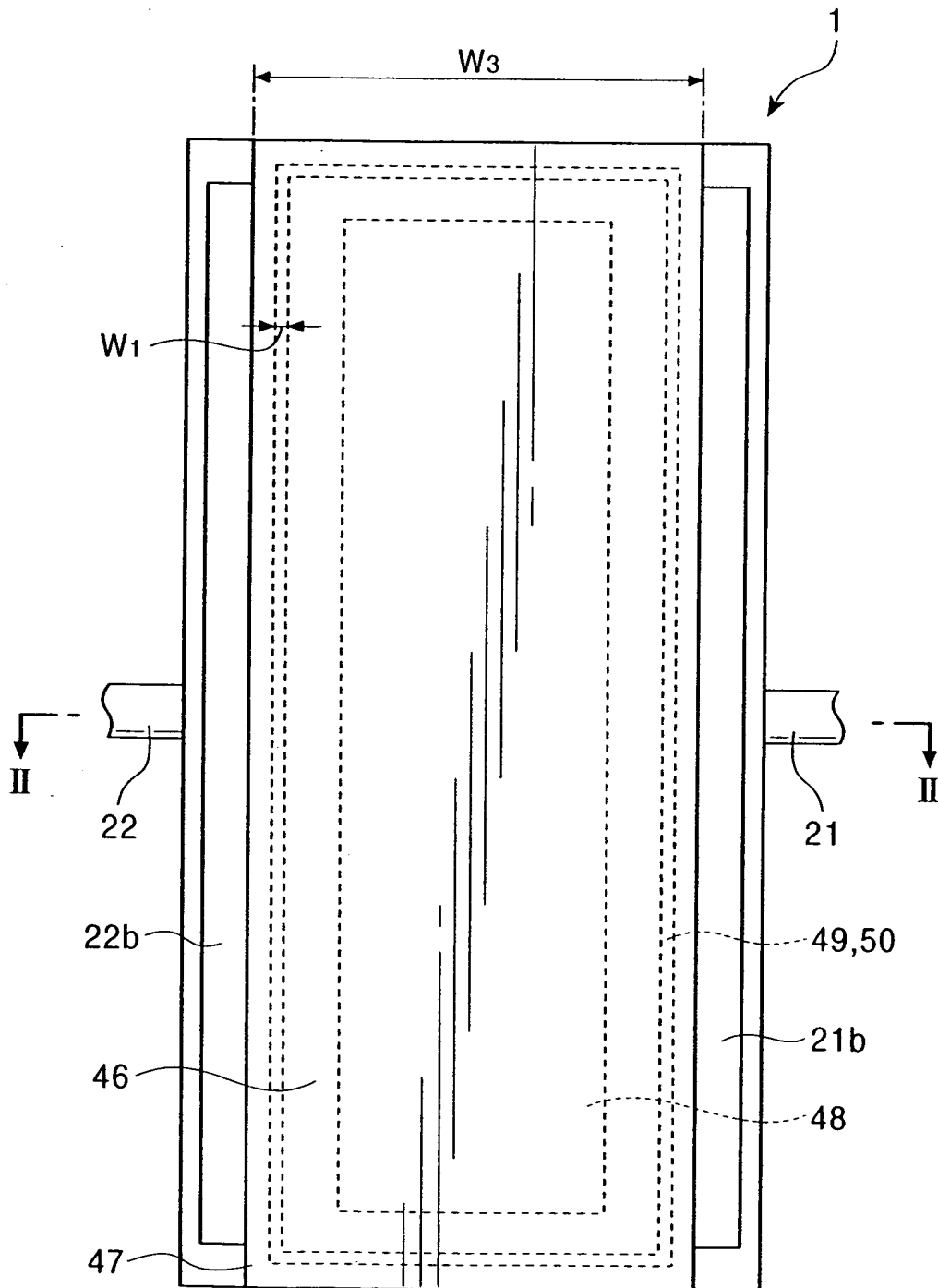


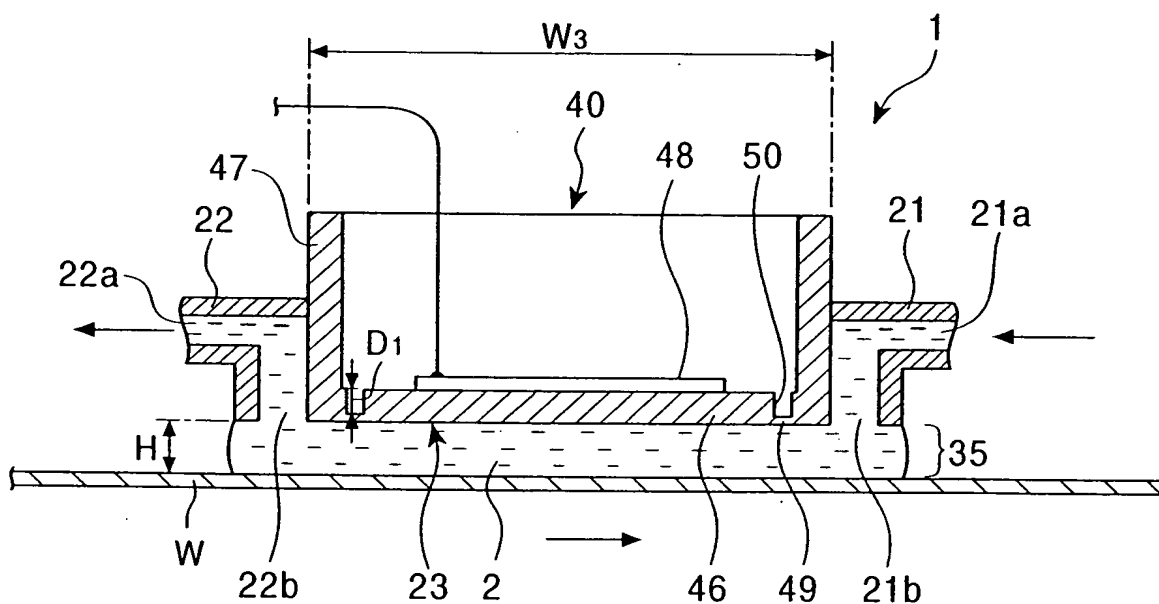
1 / 12

FIG. 1



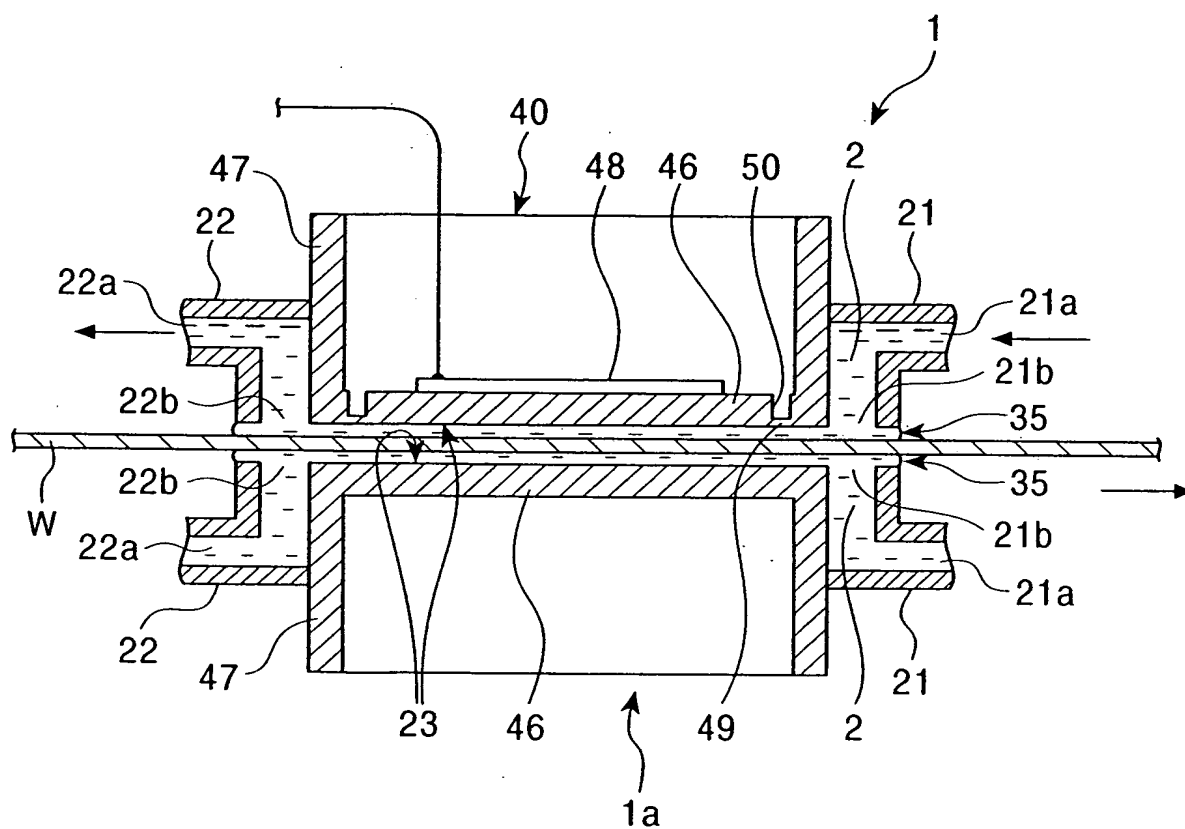
2 / 12

FIG. 2



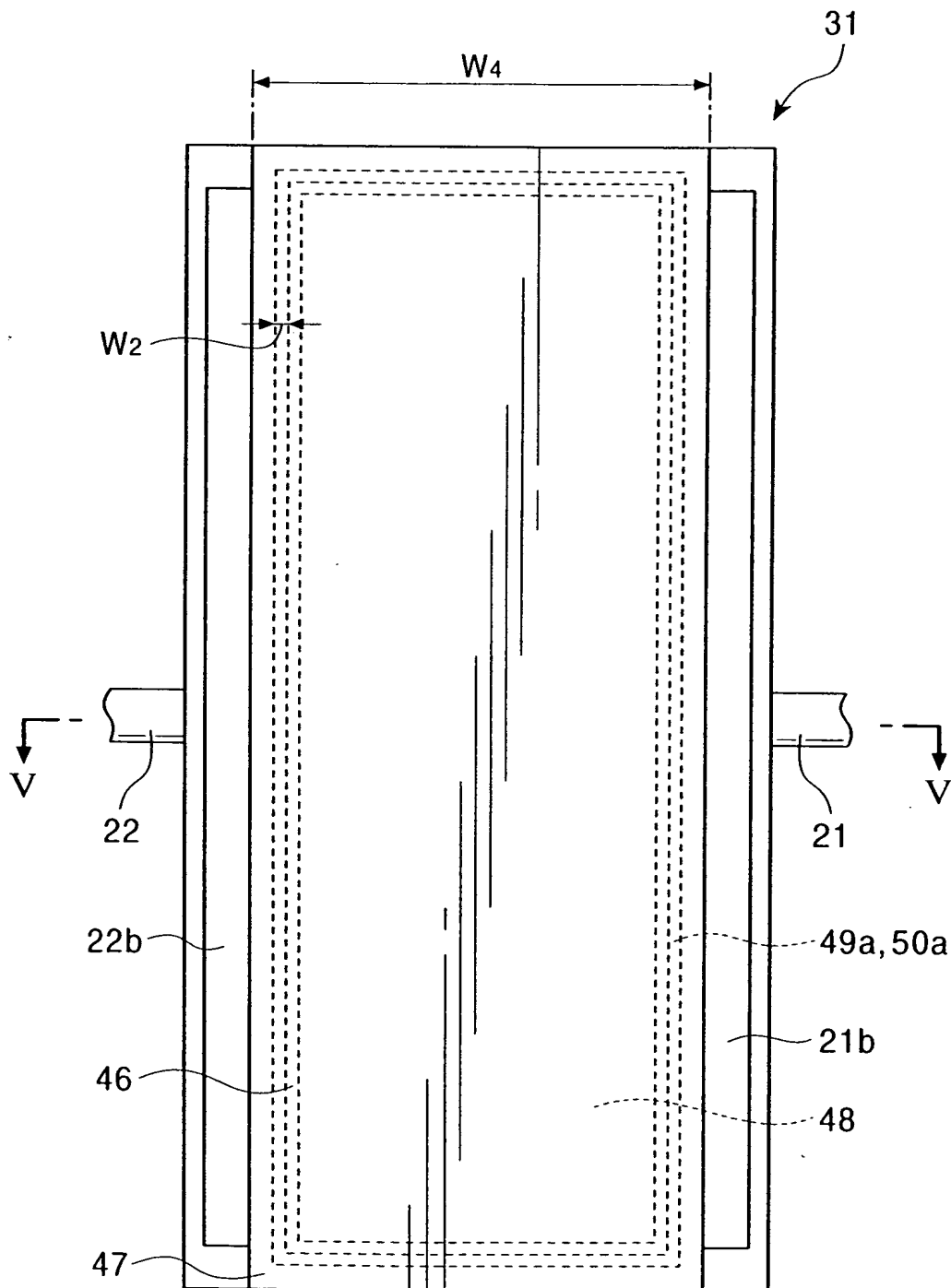
3 / 12

FIG. 3



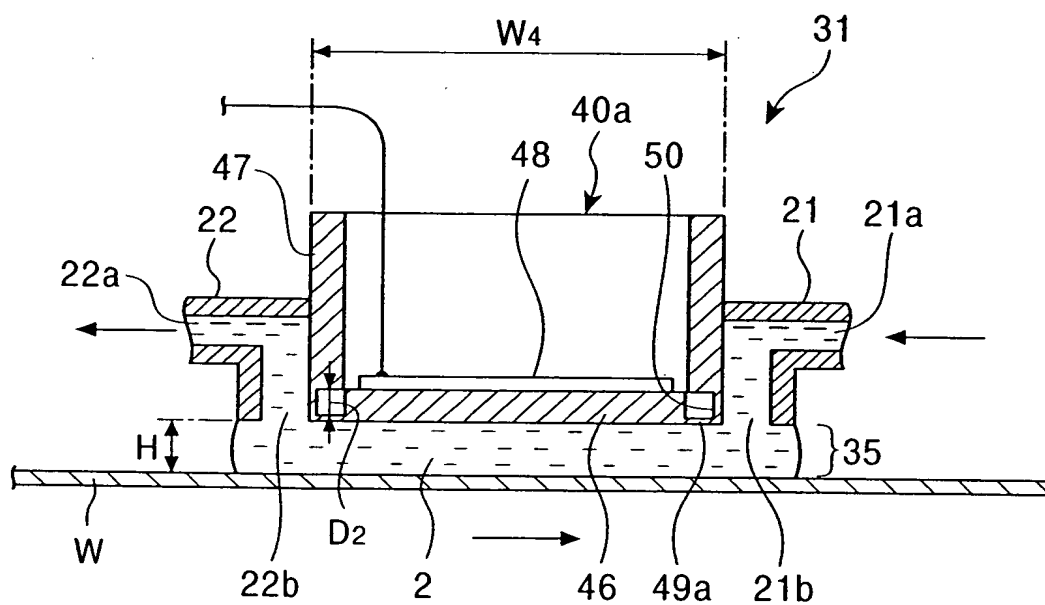
4 / 12

FIG. 4



5 / 12

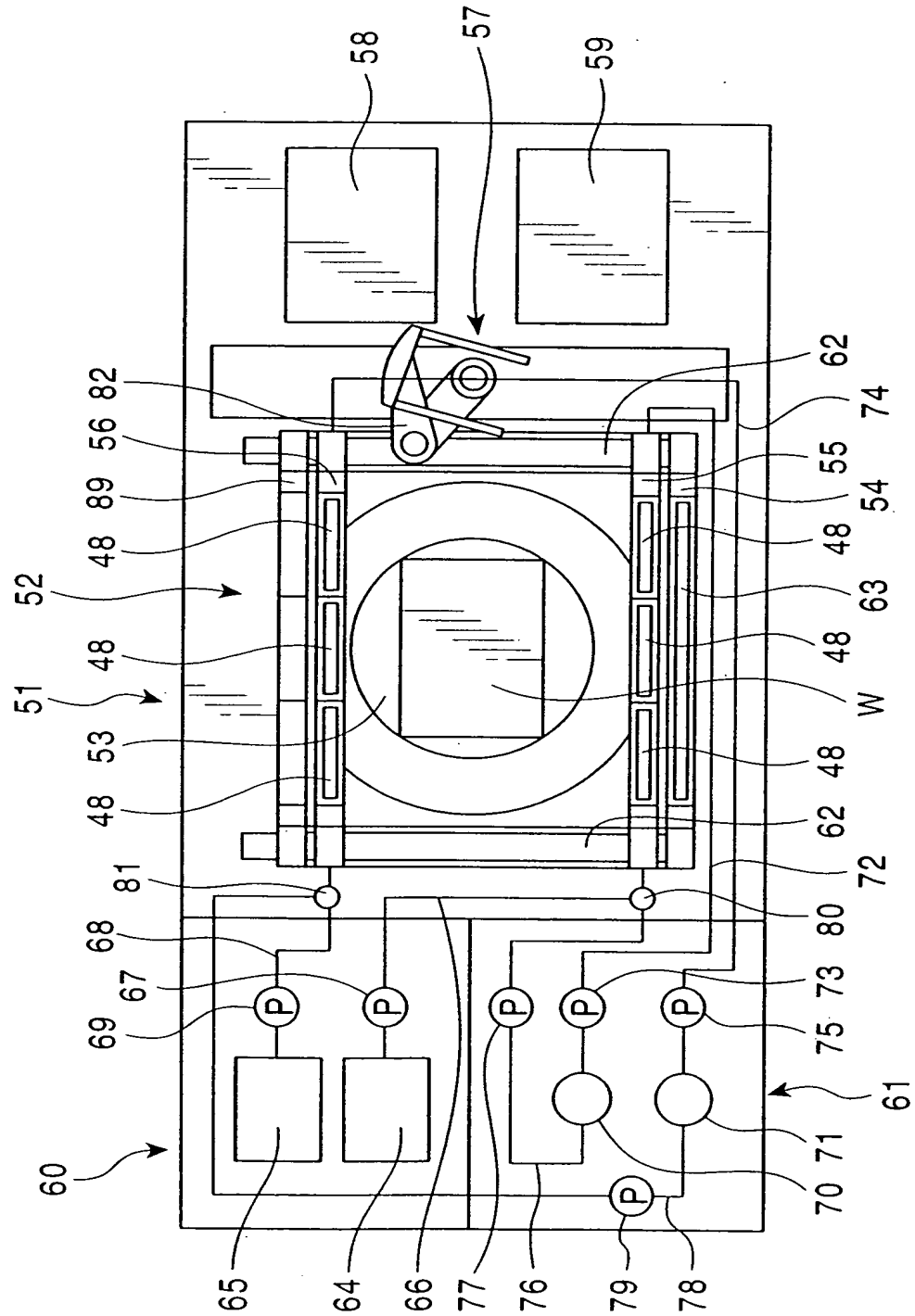
FIG. 5



This cross-sectional view shows a semiconductor device 1a. A central region 40a contains a gate 48 and source/drain regions 46 and 49a. The device is built on a substrate 2. A gate stack 21 is formed on the substrate, and a passivation layer 31 is on top. Arrows indicate fluid flow paths through various openings and channels, including a central channel 40a and side channels 22a, 22b, 21a, 21b, and 35. A width W is indicated for a portion of the device.

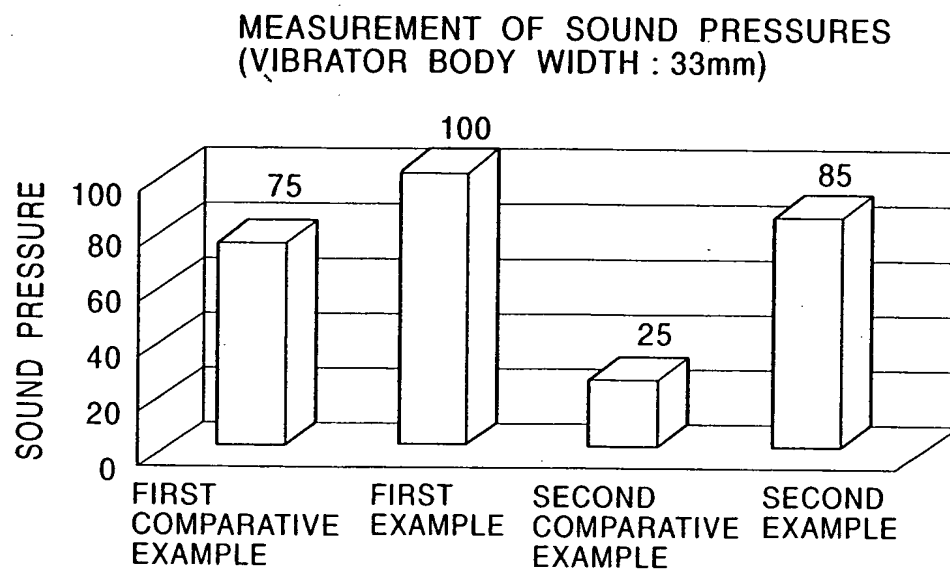
7 / 12

FIG. 7



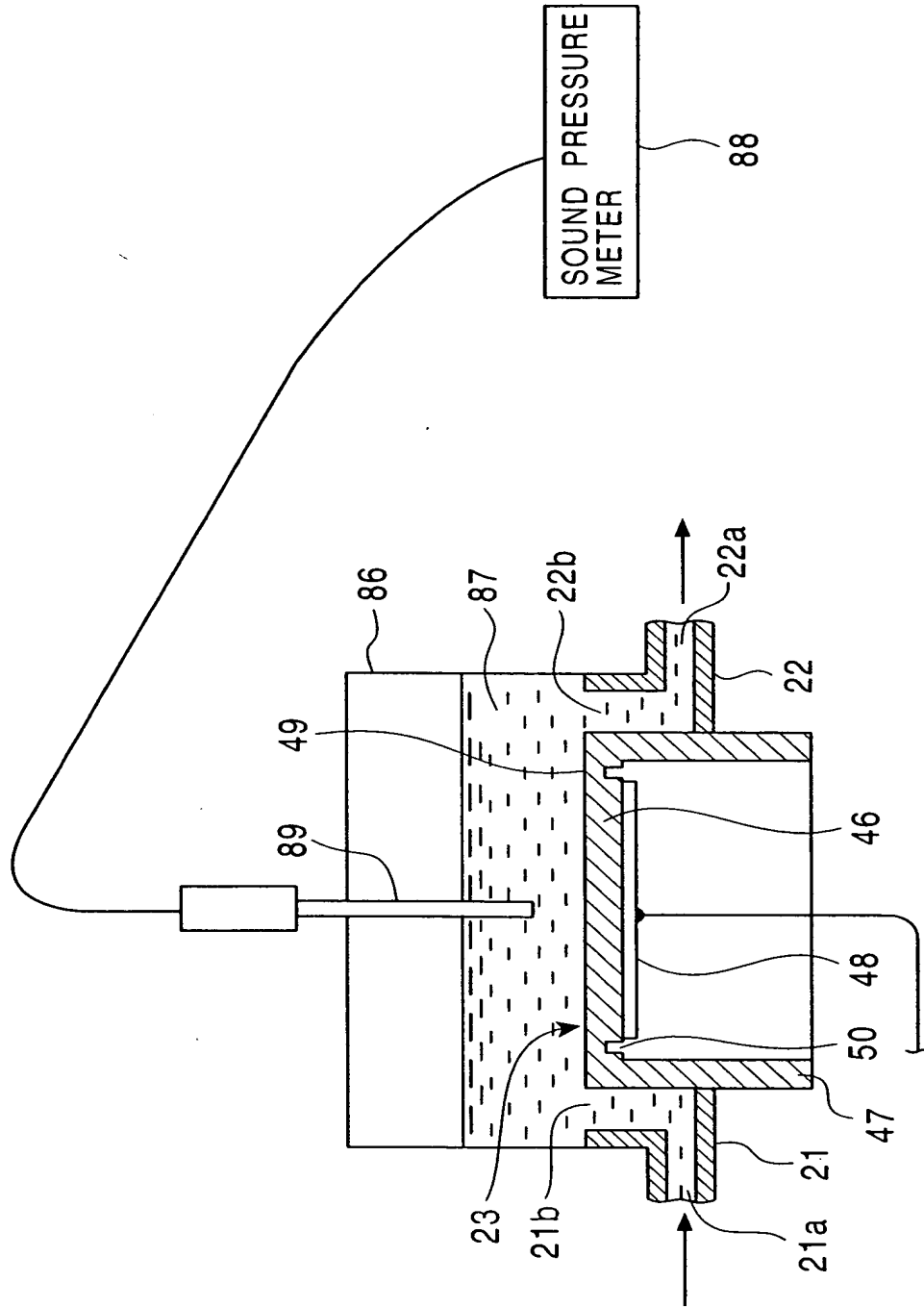
8 / 12

FIG. 8



9 / 12

FIG. 9



10 / 12

FIG. 10

COMPARISON OF NOZZLE DEPTHS
(VIBRATOR BODY WIDTH : 33mm)

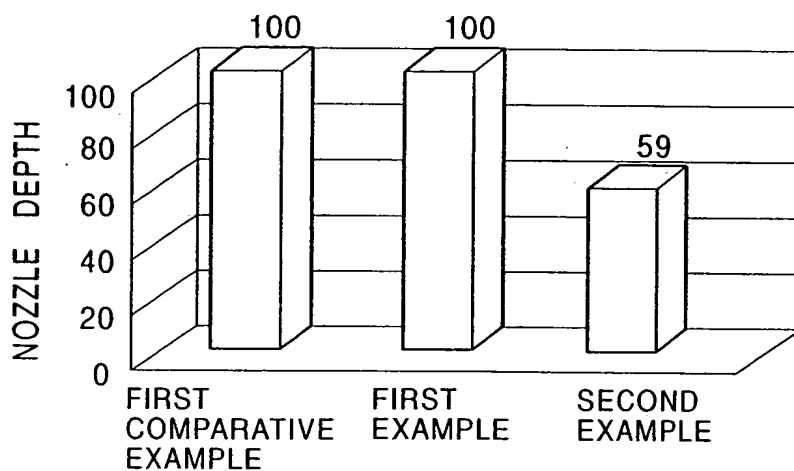
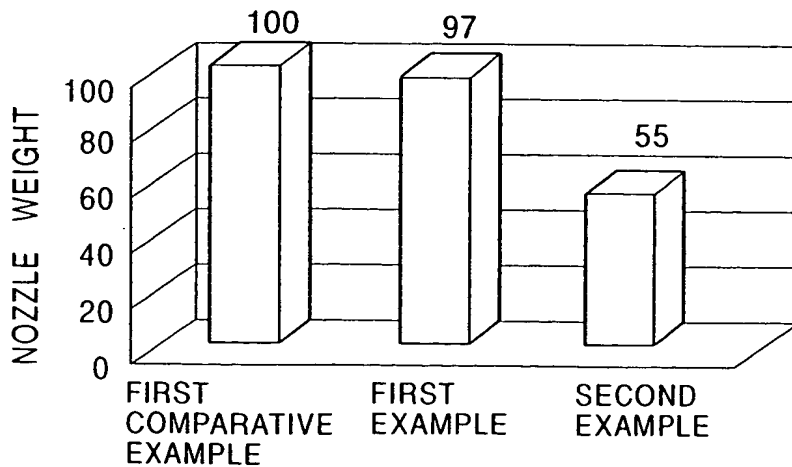


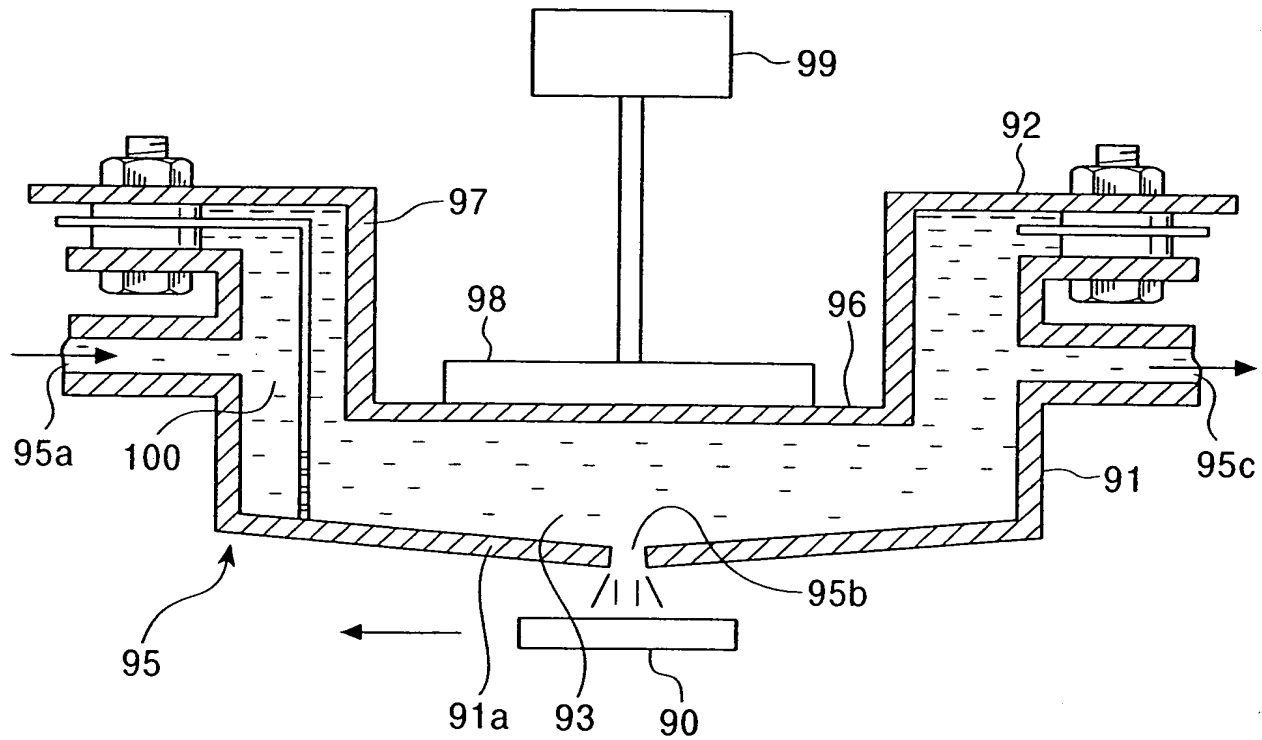
FIG. 11

COMPARISON OF NOZZLE WEIGHTS
(VIBRATOR WEIGHT)



11 / 12

FIG. 12
PRIOR ART



12 / 12

FIG. 13
PRIOR ART

